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ABSTRACT

Though visual literacy is gaining recognition, visual communication is under-utilized by special educators. Children are growing up in a world where much of their learning is visual, and schools which have included visual communication in their curriculums have found that it has enhanced the ability to write, and contributed significantly to affective education. There is research to support the connection between visual and verbal learning. Visual mediators, for example, have helped subjects remember paired words, and visual sequencing has been an avenue to improved written sequencing. There are several programs that do use the principles of visual communication in teaching the exceptional child such as Media for Exceptional Children (Project ME), A Bookless Curriculum at Ridley Senior High in Delaware County, Pennsylvania, Wyoming School for the Deaf, Northeast Regional Media Center for the Deaf (NRMCD), and Green Chimneys School for emotionally disturbed children in Brewster, N.Y. The Regional Resources Center proposes to implement a more inclusive visual communication program, using Instructional Television (ITV) programs designed to educate teachers as well as students. The model recommended is Science for the Seventies (SFTS). (WBC)

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VISUAL COMMUNICATION

IN

SPECIAL EDUCATION

USING TELEVISION AND MANIPULATIVE MATERIALS

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Definition of Visual Communication

With some degree of accuracy it is possible to define visual communication as the "ability to decode (read) and encode (write) a visual language". To read a visual language means to be able to learn from visuals; to write a visual language means to produce a visual language. Both processes make up a visually literate individual. To elaborate a bit further, if reading can be defined as any visual experience which brings meaning through the eye by use of symbols, then more kinds of materials can be considered reading materials - namely, visuals or the visual media. Therefore, at the risk of oversimplification, visual communication or visual literacy could be coined as "seeing is reading".

Another more detailed definition of visual communication is one stated by the members of the National Conference on Visual Literacy.

> "Visual literacy refers to a group of vision-competencies a human being can develop by seeing and, at the same time, having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, and symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterworks of visual communications."

Others feel that visual communication is made up of numerous techniques used by people to communicate with each other in non-verbal ways; techniques such as body language, art forms, pantomime, graphic expression, filmed expression, picture

story expression and television. In addition, visual communication contains some McLuhanism, graphic arts, aesthetics, and psychology.

However, from the varied definitions, there is some consensus that a "visually literate person is one who can perceive and expertly interpret individual visual images, sequences of visual images, and patterns of visual images (in an analogy with sentences, paragraphs, and complete works of written material), and that he can use images, sequences, and patterns to express himself effectively and even eloquently".

Visual Communication and the Education Process

There are numerous educational implications contained in a study of visual communication. Some of them are general in nature; while others are more specific and imply a visual-verbal connection between visual literacy and verbal communication; i.e., reading, writing and spelling.

The more general educational implications in visual communication can be understood in terms of: relevance, motivation and humanization - educational aims that are indeed significant but, too often, over-used. Because visual communication does, in fact, embody these educational aims, they will be briefly explored:

Visual communication's relevancy to the educational curriculum can be justified by the fact that we live in a visual culture. Our children are growing up in a world of instant communication where much of their learning is related to the eye, and verbal communication is no longer the prime method of conveying ideas, thoughts and facts; nor the most adequate. The creation of Sesame Street, the Electric Company, and now Project One, an educational television project, similar in visual concept to Sesame Street (but only in the area of mathematics) is an indication that our children are becoming steeped in visual learning approaches; not precluding

the array of other visual media and technology that are in their lives. The development of visual literacy skills can be justifiably viewed as the development of survival skills to enable students to live effectively in contemporary American society. In fact, a visual communication program can be thought of as a...

> "communication vehicle that provides students with the necessary skills to record and interpret their world as it really is - both objectively and subjectively".

Television is the prime contributor to the motivating effect of studying visual communication in the schools. The amount of time this generation of children has spent in front of television has produced skilled visual readers. Perhaps television awakens a latent evolutionary sense - that visual communication is fundamental to humans. Evidence is beginning to appear that humans communicated with gestures of body and objects; i.e., with visual language, prior to developing verbal language.

From research in child development, it is thought that infants primarily learn about the world through their eyes. It has also been stated that we acquire eighty percent of our information visually. In addition to the evolutionary and developmental reasons, a study of visual communication is motivating to students because there is active participation. Learning becomes interactive, and a "product" evolves. When the product is a still photo or moving picture developed for the purpose of sending out a message, then the process not only involves the whole person, but also the product becomes autotelic, as well as rewarding to the producer. A visual communication program developed at an Enfield, Connecticut High School, to stimulate learning in social studies, was aimed at non-achievers. The product was to create a slide/tape presentation. This involved research, organization, cooperation, communicating, translating ideas to visual terms, and a natural integration of other learning skills.

The slide/tape presentation was not only used in the school as a resource, but also was brought to the community and shown to local civic groups. The visual communication lab that grew out of this first experience allowed students to move more easily into writing out their experiences and developing a journal. We could ask again why projects such as this, in which visual techniques were combined with traditional verbal subjects, were motivating. Maybe it's because it has been estimated that thirty percent of our children can learn more efficiently, visually than verbally, and visual communication is more essential to our lives than has been realized. At the Wiltwyck School for Boys in Yorktown Heights, a school for emotionally disturbed children, a basic photography program was started, and it was reported that "in general, attitudes of the children changed from lethargy and disinterest to curiosity and enthusiasm". The motivation to learn and create visually is something very natural and spontaneous to this generation of students because of their already well-developed visual literacy. "They seem to take to such activities as if they were born to them as, of course, in a very real sense, they were."

Humanization deals with the current educational commitment by the schools to recognize its responsibility of helping children learn to deal with attitudes, feelings and emotions. Visual communication can be a significant contributor to affective education. One example of this occurs when students can, after viewing a classmate's film, praise and criticize it while the film-maker is prepared to accept and rebut and to take responsibility for his work. This process is a humane one because all are involved in trying to genuinely understand how the film-maker's visual style has affected them, and to help the film-making exercise become more than just self-expression.

Another example of how visual communication contributes to affective education occurs when dramatics is brought into the classroom. Self confidence is gained by

the performers as they continually perform and as they watch each other perform. Their primary mode of communication is visual, and visual communication means to be able to take responsibility for interpreting meaning and communicating that meaning, which is in fact what these performers are trying to accomplish.

In the Wilmington School District visual communication, in terms of film-making, was taught and evaluated. The visual communication program was a Visual Imagery Project aimed at improving the self-concept of the urban, disadvantaged child. This federally funded project, which began in 1970, went through an evaluation period from July 1972 to June 1973. The major objective of this project was to improve the self-concept of nine, ten and eleven year old inner-city pupils by using film-making to portray and understand their cultural experiences. The evaluation covered sixty-two students from the Sarah W. Pyle School, and nine students from the St. Mary School, as the experimental group. Fifty-six students from the Stubbs School made up the control group. The evaluation methodology was pre and post scores from the Piers-Harris Children's Self-Concept Scale, and collected data on the participation between the two groups. The results of the Piers-Harris Children's Self-Concept scale illustrated...

> "that gains in positive self-regard over the duration of the Visual Imagery Project were substantially greater for the experimental than for the control group. This is indicated by the magnitude of difference between the pre and post-test mean scores of the experimental group - 12.85, as compared with the control group's mean score difference of only .46".

Other aspects of self-concept were analyzed, such as: improved personal and group relationships of project students; improved self-expression; and increased

annual attendance, as well as aspects other than those set forth by the Project's objectives.

The above examples illustrate that an effective visual communication program allows the students to develop a better concept of self which carries over to their relationship with others.

The Visual-Verbal Connection

The more specific education implications of visual communication are related to the visual-verbal connection between visual communication and verbal communication.

The first visual-verbal connection is of a developmental nature based on research by Dr. John MacNamara of the University of Toronto. He has been studying the acquisition of verbal language by very young children. His studies show that visual experiences are an aid in acquiring a verbal language. MacNamara states that the child "uses meaning as a clue to language rather than language as a clue to meaning". Thus, the child begins to derive meaning from his visual experiences. He learns to read sequences of visual signs and attach meaning to them and then he is able to understand spoken verbal signs. For example, in the two sentences: The girl struck the boy, and give me the book - the way the infant knows the difference between these sentences is through meaning, obtained by observing what is happening at the time the sentences were uttered.

Other research of a developmental nature was conducted by Jerome Bruner. Bruner's research on the intelligence of infants happened to uncover their high degree of visual-perceptual abilities. An experiment was set up, using four, five and six week old infants as subjects. The infant was placed before a movie screen with a pacifier in his mouth. The pacifier was attached to the focus mechanism on a movie

projector, so that when the infant sucked on it, the picture would come into focus; or the reverse would happen - the picture would go out of focus when the infant sucked on the pacifier. Infants in this experiment learned quite rapidly how to keep the picture in focus. In fact, the infants conscientiously increased or decreased their sucking so that the picture would stay in focus. This experiment may indicate that infants (perhaps a few days old) have attributes of visual perception most of us felt were characteristic of older children.

A second relationship between visual and verbal communication involves our technological progress from the invention of the printing press to the development of television. As the invention of the printing press spread verbal communication, the discovery of television has spread visual communication. With the advent of television, visual communication became intentional. Through television, children are exposed to highly sophisticated, precisely and efficiently tailored sequences of visual signs. This visual language is written and carefully composed by image recording methods, such as photography and videotape. This visual language is sequenced, and visual sequencing is as significant to visual literacy as verbal sequencing is to conveying a message. There is an orderliness, i.e., syntax and grammar to visual communication, as there is to verbal communication.

Jack Debes, in his paper, "Superminds: New Potentials for Educating Children Through Visual Literacy", which was presented to the Oklahoma State Visual Literacy Conference, offered this summary:

> "These four elements in combination: the ability to write visually, to use visual signs intentionally, to compose them in sequences, to compose them according to a syntax or order - all these elements combine to make visual literacy a new attribute of man. In the same sense visual literacy became possible with the advent of the printing of visual images, verbal literacy became possible with the printing of verbal images."

Research has been conducted that supports the connection between visual learning and verbal learning.

Research on visual memory was conducted by Ralph Norman Haber of the University of Rochester. In one experiment, college freshmen viewed thousands of photographic slides for brief periods, and were then asked to select the same visuals they had previously seen from a new set of visuals. The subject's ability to recognize the same visuals, which were mixed in with others, was 85 to 95 percent accurate. This led Haber to conclude that the capacity of memory for pictures may be unlimited.

Haber went on to state that although a person may remember almost any picture he has ever seen, he frequently is unable to recall details from a specific image when asked to do so. Since pictures are not stored in words they cannot be recalled in words either, at least not in much detail, unless the memory is stirred by an activity such as the free-association exercise. The free-association exercise that he is referring to was another experiment to aid the subjects in recalling visual details. When a free-association word exercise was tried on one group, they were able to remember or recall more visual details that they hadn't recalled before the exercise. Haber concludes from this experiment that visual recall could "dramatically" improve if words were attached to visual images.

A recent experiment, done by Arni T. Dunathan and Terry Brink, both associate professors of education at the University of Missouri, supports Haber's conclusion.

Adult learners were presented with a series of slides that were to help them remember a real word and an artificial word. The study was designed to test some of Rohmer's conclusions - that a stimulus for a desired response should be concrete rather than abstract, and pictorial rather than verbal. The slides represented four conditions:

Control condition - which contained just the real word and artificial word pairs;

verbal mediator condition - which contained the real word and artificial word, plus a sentence mediator which incorporated the use of the two pairs of words;

pictorial mediator condition - which contained pictorial versions of the sentence mediators plus the real word and artificial word pairs;

sentence pictorial mediator condition - which contained the pictorial versions of the sentences, the sentences and the paired words.

It was found that visual mediators did help the subjects remember the paired words. However, the sentence-pictorial condition in which the picture, the sentence and the paired words were contained on one slide proved to be significantly more helpful as mnemonic aids.

Both of these experiments support the fact that optimal learning occurs when a combination of verbal and pictorial teaching strategies are employed.

Visual Communication Programs in Regular Education

The relationship between visual and verbal communication has significant educational applications for regular education. For example, an understanding by the educator that a visual vocabulary aids infants in acquiring a verbal one, allows the educator to consider the use of visuals in teaching verbal skills. If the student is having difficulty in the verbal area, the teacher could make use of the student's latent visual vocabulary to stimulate the verbal one.

Using visual sequencing as an avenue to improve written sequencing was tried at the Greece Central School District (Greece, suburb of Rochester, N. Y.) by Ruth LaPolt,

supervisor of language arts for the District. Her rationale was "that students five to eight years old cannot sequence more than a few ideas in written or oral expression because of inadequately developed visualization ability and sequential memory". Using still cameras and photo-story discovery sets, the students were taught visual sequencing. The results showed that when the youngsters planned, shot, and sequenced their own series of photographs to tell a story, they doubled or tripled the number of ideas they could order successfully.

Pictures are another method for teaching students the elements of good sentence structure. Pictures can contain such grammatical elements as: subject, predicate and object. Transformational grammar is illustrated when pictures, as well as words, are used to "diagram" a sentence. Sequencing pictures to create a visual statement can help the student understand the order of words through the order of pictures. In pictures, there is an abstract structure besides the grammatical one. The abstract structure in pictures is expressed through selecting a point-of-view, by cropping, and by using visual modifiers. Visual modifiers, such as: lighting, focus, density (degree of darkness and lightness), and contrast parallel verbal modifiers, such as adjectives and adverbs.

Film production teaches the student about the syntax inherent in visual communication. The word is the basic unit of verbal composition, and the basic unit of movie composition is the "shot". As in written composition there are various types of words, so in movie composition there are various types of shots. In the same way that the order of words is important to conveying a verbal message, the order of shots is important to conveying a visual message. When students first shoot a scene, if they use only one kind of shot, they convey only one part of the message. However, if they use many types of shots, they convey the whole message. They also learn that

the ordering of the different types of shots is important to the syntax of their movie composition. Therefore, the students learn that in the same way there is syntax inherent in movie composition, there is syntax inherent in written composition.

Another educational program that makes use of the visual-verbal connection is one found in Lewisburg, Pennsylvania. An English teacher, Patsy James Marra, worked with other elementary teachers to create an "individualized textbook program". In creating these textbooks, students from the same grade level contribute a page or pages of information that they want to express or is newsworthy to other students. The information is in both visual and print form. The visuals are either snapshots or drawings, and the printed text is either written or dictated and then typed. The pages are collected and printed and enough books are published for the entire grade level. This is another example of how visuals are used to improve writing skills.

Movie-making was used as an alternative method for teaching required reading vocabulary to first grade students at an inner-city school in Rochester, New York. In preparation for the film, the students selected a theme and with the teacher "wrote" the script. The script consisted of a vocabulary developed out of their descriptions of the theme, which was converted into sentences; plus teacher-added words from the book being used as a reader. Cue cards were made from the script, action was planned and roles were assigned. When the students viewed the film (which was developed quickly to avoid a delay in feedback) the visual action of the "actors" or students served as a cue to the meaning of the already familiar words that were used on the cue cards. Then the class proceeded to read in the selected reading book. During that year the class made seven films which were thirteen minutes long and covered a range of subjects from social commentary to personality problems. Reading tests showed that these students gained at least one year in reading ability as compared to the other first-grade students who did not

have the movie-making experience. A significant finding was made in a follow-up study by Dr. Keith Whitmore of the Eastman Kodak Research Lab, who had helped design the movie-making program.

> "At the end of the fourth grade, the students from the movie-making first grade had maintained both their reading gains and their relative reading homogeneity."

The Milford Visual Communications Project has developed a comprehensive curriculum in the area of visual communication. This Project, located in the Cincinnati suburb of Milford, Ohio was initiated in 1970 by Roy Ferguson, Chairman of English at Milford. The full-system program started operation in 1972. The Milford Project was one of the few, if not the first project, to attempt to develop a comprehensive, sequential visual communications program for K-12. Therefore, the Milford program served as an important model for schools attempting to broaden curriculum options in the area of visual communications.

The curriculum included five phases, each with general objectives, specific skills, and specifically designed program materials and learning activities. These five phases which made up this curriculum are: Visual Perception, Still Photography, Relationship between Sound and Image, Media Hardware, and Multi-Media Comparisons.

Presently, a book titled, The Milford Visual Communications Project, is being published by Pflaum-Standard. The book serves as a guide to implementing a total visual communication curriculum in the schools. Also, an evaluation of this program is being conducted by graduate students at the University of Cincinnati.

Special Education Programs and Projects in Visual Communication

The educational applications contained in a study of visual communication can also apply to the field of Special Education. There are several programs that

use the principles of visual communication in teaching the exceptional child. These programs are: Media for Exceptional Children (Project ME), A Bookless Curriculum, Multimedia at the Wyoming School for the Deaf, the Northeast Regional Media Center for the Deaf Visual Literacy Program, and the Green Chimneys School Visual Literacy Program. All of these programs use visual communication as an alternative instructional technique.

Media for Exceptional Children (Project ME) is an audiovisual program developed under a contract with HEW. It is aimed at preschool and primary exceptional children who are learning disabled, emotionally disturbed or educable mentally retarded. The rationale behind this audiovisual program is unique, for it uses a "learning wall", a life-size projection screen which provides for a high degree of interaction with the visuals. This is accomplished by the students viewing a filmstrip and at certain intervals going to the screen to either write, trace a projected image or, perhaps, match their body images with those projected on the screen. The filmstrips cover body image, visual-perceptual skills, directionality and affective education.

A Bookless Curriculum is the title of a film curriculum developed by Roland Brown, a teacher at the Ridley Senior High School in Delaware County, Pennsylvania. Brown states that the purpose of this bookless high school English curriculum is to reverse a student's negative attitude toward English in particular and school in general. It is for the non-reader, the hate-to-read-er, and the non-communicator. The curriculum is divided into nine sections (e.g., "What Makes People Laugh?", "People...Problems... Ideas", "Justice and Injustice", and each section is sub-divided into related themes.

Brown, in commenting about the curriculum, discussed the fact that a media-oriented curriculum is a viable alternative curriculum, especially for non-readers. He stated:

> "If this generation of students is a more visually oriented generation than others, as many experts in the field claim, why shouldn't teachers capitalize on the student's ability to grasp the visual image in situations where they cannot grasp the written image."

At the Wyoming School for the Deaf, a multimedia approach was tried for the purpose of enlarging the language input and output of profoundly deaf children. It should be noted that a multi-media approach means that the teacher uses as many media as possible to achieve the required objectives: i.e., overhead transparencies, pictures, study boards, filmstrips, captioned films, slides, polaroid pictures, 8mm films, printed program material, simple teaching machine materials, books, etc. It was felt that the teaching of language via a visual input tied it to the total psychological experience of the student. Since the school had been using this learning style, a more formal evaluation seemed necessary. The results of this evaluation indicated that the mediated approach was very effective in increasing student learning.

In response to a need for materials geared specifically for the deaf, the Northeast Regional Media Center for the Deaf (NRMCD) developed a program designed to teach middle-school aged children how to communicate using visual media. For these children, in particular, to have an alternative form of communication, that allows them to express those things which they may not be able to verbalize, is extremely important. In the education of the deaf, media has played an integral part, but there is a significant lack of visual literacy programs and materials for deaf students.

The visual literacy program was set up not only to teach specific visual communication skills but also to facilitate high levels of student interaction and

participation and to stimulate language development. These aims were accomplished through the use of such media as graphic arts, photography and videotape.

In this program, one of the primary questions that had to be constantly responded to was: "How will we know if visual communication is successful?" A functional definition of successful communication is that "the information presented is correctly identified by at least one-half of the class". As a means of measuring successful communication, the student completes a project and presents his work to the class. The class then tries to identify the intended message. If one-half of the class can identify the message, the communication can be considered successful. This program is currently being considered for distribution by the National Center for Educational Media and Materials for the Handicapped.

In 1968, the Green Chimneys School, a school for emotionally disturbed children, located in Brewster, New York, conducted a pilot summer-school visual communication program. This program involved twenty-two second and third grade students. During the program, the students used still and movie cameras, to develop a new form of communication. At the conclusion of this program, Samuel B. Ross, Jr., Headmaster of the school, felt that the self-concept and self-esteem of these youngsters had improved, and that they did become motivated and interested in academics. In the Fall of that year, a total visual communication program was implemented. At this time, the Green Chimneys School continues to offer a comprehensive visual communication program to its students.

This paper began with a discussion of the educational implications contained in a study of visual communication. It was suggested that visual communication has

much to contribute to the field of education - both regular and special. Examples of educational applications, research supporting these applications and programs that are currently using visual communication were discussed. It is apparent that a need exists for developing a more comprehensive program of teacher and student education in the field of visual communications.

Needs Assessment - Determination of Need

This paper addresses a need of significant importance - the fact that visual communication is under utilized by special educators.

The field of Special Education uses many and varied educational alternatives that meet the specialized academic needs of their students. One of the alternatives used in Special Education is visual communication. However, the potential of visual communication as an instructional tool is not being explored by special educators to the degree that is essential.

For a field that is a leader in innovative and creative approaches to education, the lack of awareness to visual communication's potential contribution to special education is unacceptable.

By not taking full advantage of a prime educational resource, special educators are overlooking an important aspect of visual communication: that visual communication uses methodologies which utilize little used channels of communication; and that it has the potential, like written communication, to expand the means for human interaction and educational growth. Caleb Gattegno, in his book, "Towards a Visual Culture", suggests the power of visuals to influence learning by commenting on the nature of the visual sense:

> "Sight, even though used by all of us so naturally, has not yet produced its civilization. Sight is swift, comprehensive, simultaneously analytic and synthetic. It requires so little energy to function, as it does, at the speed of light, that it permits our minds to receive and hold an infinite number of items of information in a fraction of a second."

Perhaps it is the way special educators view visual expression that accounts for its "intermittent" use in the classroom. To perceive visual expression as an art form just for those specially trained in it, is to ignore a valuable part of the human potential. As Donis Dondis stated in her book, "A Primer of Visual Literacy":

> "The visual mode is a whole body of data that can be used, like language, for composing and understanding messages at many levels of utility from the purely functional to the lofty precincts of artistic expression."

To waste so valuable an educational resource as visual communication will hinder special educators in reaching their instructional aims. According to Dondis, it is likely that visual literacy will be one of the fundamental measures of education in the final third of our century.

A lack of knowledge of the role the visual image plays in our contemporary society can lead to visual illiteracy. Visual illiteracy today is not as well known as other kinds of illiteracies; however, it has been gaining in recognition, since the invention of the camera. The invention of the camera brought about a new view of communication and of education. In 1935, Moholy-Nagy, the brilliant Bauhans master said:

"the illiterate of the future will be ignorant of pen and camera alike."

Our visual culture does demand that people be visually literate. Today, much of our information is being studied and transmitted in non-verbal modes, especially through photography and film. The camera, the cinema, television, videotape and other visual media are modifying our definitions not only of education, but also of intelligence itself.

Modality Preference Research

In recent years a great deal of emphasis has been placed on modality preferences and their relationship to learning. The results of this research seem to indicate that there are differences in modality preferences among children. A research study entitled, "Intellectual Development and the Ability to Process Visual and Verbal Information", has been conducted by B. S. Randawa at the University of Saskatchewan, Canada. The purpose of this study was to determine information processing abilities in children. More specifically, he wanted to determine if the child's capacity for processing information increases in amount with maturation and, in particular, the relationship between visual processing and auditory processing.

He categorized the input modalities as Visual (V) and Auditory (AU), and the output modalities as Reconstruction (R) and Verbal Description (V-D). For the study, these modalities were tested in the following combinations: V-R, V-VD, AU-R, and AU-VD. The subjects were forty children comprising four treatment groups of ten each, from five, eight and twelve year age levels. The results, in general, illustrated that a child's capacity for processing information does increase in amount with age.

More specifically, the relationship between visual processing and auditory processing varied within the age levels. For example, in the input phase, the five year olds can better process information via the visual input rather than via the auditory input. Whereas the twelve year olds can process information equally well in both the visual and the auditory modalities. For the output phase, the young child's ability to visually reconstruct (or communicate) greatly superceded his ability to verbally communicate what he had seen. Whereas the older child could communicate almost equally as well in either the visual or output modality. It may be stated that for young children, the communication mode in which they can deal conceptually, most effectively with new ideas is a visual one. However, the study indicated that for all age levels, the capacity for processing information via the visual input was greater than for the auditory input.

Another study recently conducted on sensory modality preferences by Mann, Proger and Goodman produced incidence figures which illustrate that in early learners a visual learning preference is stronger than an auditory one.

The researchers evaluated one hundred and twenty-eight kindergarten and first grade children by using subtests from the Illinois Test of Psycho-linguistic Abilities (ITPA) and the Wechsler Intelligence Scale for Children (WISC).

Using the ITPA reception subtests, sixty-four early learners were tested for either a visual or an auditory learning preference. The test scores showed that where there was a learning preference it was a visual one over an auditory preference.

When sixty-four more subjects were tested for a learning preference by the WISC digit span memory subtest, a significant differential pattern resulted. For both kindergarten and first grade, twenty-five youngsters tested to have a visual preference; whereas ten showed an auditory preference.

In general, these incidence figures do illustrate that the majority of youngsters who have learning strengths have visual learning strengths.

Most of the research that has been conducted to test the Sensory-Modality instructional model, i.e.: that teaching to a student's modality preference will enable him to learn better, has showed that is not the case. In reviewing the research, i.e.: Ysseldyke, Sabatino, Bracht, Bateman, Bruininks, etc., the results seem to indicate that programming to a child's sensory abilities makes no difference in educational gains (that, in fact, he will learn with either educational approach). Because the efficacy of the sensory-modality model, which is relied on by many special educators, has been seriously questioned, it is now left to the educator's discretion as to what teaching methods to employ.

Some special educators have chosen to continue to use the sensory-modality model because another instructional model has not been developed to replace this one. Others have chosen to use a verbal approach over a visual one; while very few special educators have chosen to use both a verbal and a visual approach in combination. This propensity of special educators to choose one teaching method at the exclusion of another, and to choose a verbal approach over a visual one (instead of perhaps a combination) is naive at best. The fact that we can measure learning

preferences and that a recent study (not yet published) has collected incidence figures in favor of visual learning preferences does indicate that the visual approach should also be used in instruction, as well as the other approaches.

It seems that the educational system is moving slowly, still persisting in an emphasis on the verbal mode to the exclusion of the visual mode, and with little sensitivity to the visual character of the child's learning experience.

Science for the Seventies and Visual Communication

The Eastern Pennsylvania Regional Resources Center for Special Education in King of Prussia works with special education personnel in nine counties in the Eastern part of the State. Part of the services of the Center is to bring media/technology resources to the field of special education. This involves an extensive amount of consultation on media to special educators. From the Center's contacts with special education teachers, it has become evident that there appears to be a significant void in the knowledge and use of media and its applications to special education.

Because of this awareness, a visual communication training program was developed for special educators by the Montgomery County Intermediate Unit and the Regional Resources Center. The Montgomery County Inservice Survey Instrument identified a need for inservice programs in educational media. The Regional Resources Center attempted to meet this need by conducting a program titled: Selection and Use of Media and Its Applications to Special Education. At that time, the Regional Resources Center, as part of the special education instructional materials/technology network, took this approach to the need for a visual communication program:

> "Because of the abundance of instructional materials, machines, and resources flooding the special education

market, and the rapid progression in educational technology, teachers cannot afford to be lacking a sophisticated awareness in selection and use of appropriate educational media."

While still recognizing this need, the Regional Resources Center realizes that a more comprehensive visual communication program is needed. As a means for implementing a more inclusive visual communication program, it was decided that the medium of instructional television (ITV) should be utilized. Because instructional television's greatest potential lies in its mass communications capabilities, there is probably no other way that the existence, ideas and philosophy of visual communication can be carried to all parts of the state as rapidly and comprehensively as through the use of television.

In addition to selecting television as the medium for a visual communications program, it was thought that these instructional television programs should be designed to educate teachers as well as students. Therefore, the particular instructional television model that was developed to transmit the science resource materials produced by the Bureau of Curriculum Services, Pennsylvania Department of Education, namely: "Science for the Seventies" (SFTS) seemed appropriate.

This instructional television model, developed under the direction of Dr. Paul Welliver, Associate Professor of Education at Pennsylvania State University, leads teachers into desirable science instructional behaviors, and it leads students into appropriate science learning activities. This is done through instructional television lessons that are structured in such a way as to actively involve both teachers and students.

During a SFTS television lesson, the teacher stands near the television set. Her role is to monitor, using the prescribed teaching strategies, the discussion

and student activities that take place during the television program. The intent here is to give the teacher practice in a desirable instructional role that will carry over into other instructional situations. The teacher's guide suggests that the teacher not judge answers as right or wrong but, rather, lead the children to observe, describe, and interpret.

The teacher's guide, that accompanies the ITV lessons, explains the rationale behind this model. Also, the teaching strategies to be employed by the teacher when using the SFTS program are fully explained in this handbook. Each teaching strategy is discussed as to its importance to the program and examples of "enabling" and "inhibiting" teachers' responses are given for each teaching strategy. All of the ITV lessons are contained in the teacher's guide. For each ITV lesson, the teacher is orientated via a brief overview of the lesson. Following this written orientation is a pictorial overview of what will be happening during the television program, and the kinds of teaching strategies that should be used. Then, follow-up activities with appropriate manipulative materials are recommended. Another feature of this model that makes it particularly effective is that the emphasis is placed upon a high degree of active student-teacher involvement and interaction. This is accomplished with simple, uncluttered, highly organized, structured presentations.

Summary

After extensive research into other instructional television models, and after an indepth appraisal of the SFTS television program, the Regional Resources Center's staff concluded that this television model is viable for special education teachers and students, and for the academic area of visual communication. This conclusion was arrived at for the following reasons:

This television model:

...employs an active learning style during the television lesson and in the follow-up sessions

...provides for the use of manipulative materials

...provides for a high degree of teacher-student interaction and involvement

...serves as a "springboard" to instructional change by the use of sound teaching strategies

...is easily adaptable to other academic areas

The instructional television project we propose is intended for regular and special education students at the elementary and intermediate grade levels. This project will be geared toward students in the following exceptionalities: educable mentally retarded, learning disabled, emotionally disturbed, culturally deprived, deaf, and gifted. These exceptionalities, as illustrated from the existing visual communication programs in special education, will profit most from this educational alternative.

Based on the background and the rationale presented in the preceding pages, it is proposed that a series of instructional television lessons be developed, using the Science for the Seventies television model, to further implement a more comprehensive visual communication program for special education students and teachers in Pennsylvania.

It is the Regional Resources Center's view that visual communication is a viable educational program which has the capacity to offer to some students a more effective means of learning.

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